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SCIENCE

FRIDAY, JULY 26, 1912

SIR WILLIAM HERSCHEL¹

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DURING the last twenty years there has been a great revival of statistical investigations as to the distribution and motions of the so-called fixed stars. Kapteyn, of Groningen, is the leader of those who are renewing the attempt to obtain in this way some idea as to the construction of the universe. Earlier astronomers had of course done something in this direction, but the work of William Herschel so far transcends that of all others, that it would be fair to describe him as the originator of this class of investigation. It may be of interest to mention that a complete edition of his works is now in course of publication, under the direction of a joint committee of the Royal and Astronomical Societies.

The interest of Herschel's writings, and the simple charm of his style—written it is to be remembered in a language which was not his from birth—have led me on to read about the man as well as about his scientific work. Throughout his life's work his name is inseparable from that of his sister Caroline, and I hope it may prove of interest to you to hear of what they were as well as of what they did. They were born at Hanover, he in 1738, she in 1750, the children of a bandsman of the Hanoverian Guards. At the age of fifteen Herschel was already a member of the Guards' band. In 1757 the regiment, which had been in England for about a year, served in Germany during the Seven Years' War, and William seems to have suffered from the hardships of the cam-

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¹ An address before the Royal Institution of Great Britain, given on April 26, 1912.

the optic lobes and the cerebellum, being derived from the procephalic neuromeres and having been carried caudally by the enlargement of the cerebral hemispheres and the optic lobes. Surely one might expect to find some indications of such a remarkable translocation in the ontogeny of the vertebrate brain, and yet one will look for it in vain. If it has occurred we must leave it to the neurologists to frame an explanation of the connections of the cerebellum.

This translocation is an essential part of Professor Patten's theory and with its accuracy and that of the supposed new-formation of the mouth the theory must stand or fall. While one may admire the ingenuity displayed in discovering unexpected homologies, one must acknowledge a feeling that in many cases they but create difficulties greater even than those they were intended to obviate. Nor does one find in the theory any explanation of the most essential feature of the vertebrate nervous system, namely, its arrangement in longitudinal zones corresponding to the nerve components. Indeed, the theory makes such an arrangement impossible, and yet an explanation of this arrangement and associated structural peculiarities must be an essential part of any acceptable theory of vertebrate phylogenesis.

But while the theory must be adjudged to be at least "not proven," it must be pointed out that Professor Patten in the study of the problem has added extensively to our knowledge of the morphology of the primitive arachnids and of the Arthrostraca, an account of the latter, based very largely on the study of material contained in Professor Patten's private collection, forming one of the most interesting chapters of the book. The concluding chapters are a discussion of the author's views as to the phylogeny of the various vertebrate and invertebrate groups, summed up in a concluding phylogenetic tree. Even though one may not agree with the author's conclusions, this portion, as well as the rest of the book, will be found well worth careful study by all morphologists.

It is to be regretted that the author has not

taken more pains to render the reading of the book less tedious. Not but that the presentation is satisfactory, barring many annoying orthographical errors, and the numerous illustrations are excellent both in execution and reproduction. But rarely is a figure to be found on the page where it is referred to and the reader becomes wearied turning backwards and forwards to find the figure to which his attention is directed, only to discover, when he has located it, that he must turn again to the end of the book to find an explanation of the lettering employed. And even then he will not always find what he is looking for. The index, too, is decidedly inadequate.

J. P. McM.

SCIENTIFIC JOURNALS AND ARTICLES

THE contents of the June issue of *Terrestrial Magnetism and Atmospheric Electricity* include:

"The Penetrating Radiation," W. W. Strong.

"Results of some Long Series of Magnetic Observatory Observations: Colaba (1846-1905), Pola (1847-1909) and Potsdam (1892-1900)," reviewed by D. L. Hazard.

"The Physical Theory of the Earth's Magnetic and Electric Phenomena, No. V.: On the Formation of the Earth's Magnetic Field," L. A. Bauer.

"Magnetic Declinations and Chart Corrections in the Atlantic Ocean according to the Observations on Board the *Carnegie*, June, 1910, to March, 1911," L. A. Bauer and W. J. Peters.

BOTANICAL NOTES

LABORATORY botanists who are looking for a constant temperature apparatus will do well to read W. J. S. Land's paper on this subject in *The Botanical Gazette* for November, 1911, where the descriptions are illustrated by working drawings quite sufficient to enable a good workman to reproduce the apparatus at much less cost than otherwise.

BOTANISTS will read "The Wilting Coefficient for Different Plants and its Indirect Determination," by L. J. Briggs and H. L. Shantz (Bull. 230, Bureau of Plant Industry, U. S. Dept. Agriculture), for two purposes: (1) The very considerable amount of valuable